

# Alaska-DLM Essential Elements and Instructional Examples for Mathematics

Fifth Grade

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## AK-DLM ESSENTIAL ELEMENTS AND COMPLEXITY EXAMPLES FOR FIFTH GRADE

### Fifth Grade Mathematics Standards: Operations and Algebraic Thinking

AK Grade-Level Clusters	AK-DLM Essential Elements	Instructional Examples
		<p><b>Students will:</b>  <b>EE5.OA.3.</b> When given a rule, generate the pattern.                      Ex. Show a pattern that increases by two and starts at 0 (i.e., 0, 2, 4, 6, . . . ).                      Ex. Show a pattern that increases by five and starts with 0 (i.e., 0, 5, 10, 15, . . . ).</p>
<b>5.OA.3.</b> Generate two numerical patterns using two given rules. Identify apparent relationships	<b>EE5.OA.3.</b> Identify and extend numerical patterns.	<p><b>Students will:</b></p>

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<p>between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. <i>For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i></p>		<p><b>EE5.OA.3.</b> Identify and extend numerical patterns.  Ex. Identify the following pattern as counting by twos and extend the pattern: 2, 4, 6, __, __, __.  Ex. Identify the following pattern as counting by tens and extend the pattern: 23, 33, 43, __, __.</p> <p><b>Students will:</b>  <b>EE5.OA.3.</b> Extend a picture pattern.  Ex. Given red, red, blue, red, red, ____, identify the missing color.  Ex. Square, circle, triangle, square, ____, triangle. Identify the missing shape.</p> <p><b>Students will:</b>  <b>EE5.OA.3.</b> Repeat a pattern.  Ex. Teacher claps twice, student claps twice.  Ex. Activate a switch or indicate which choice shown repeats the pattern shown.</p>

# **Fifth Grade Mathematics Standards: Number and Operations in Base Ten**

AK Grade-Level Clusters	AK-DLM Essential Elements	Instructional Examples
<p><b>Understand the place value system.</b></p> <p><b>5.NBT.1.</b> Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.</p>	<p><b>EE5.NBT.1.</b> Compare numbers up to 99 using base ten models.</p>	<p><b>Students will:</b></p> <p><b>EE5.NBT.1.</b> Compare numbers by composing and decomposing in two different ways.</p> <p>Ex. Decompose numbers by place value and compare by hundreds, tens, and ones (with the understanding that one 100, two 10s, and three ones combined is 123 ones).</p> <p>Ex. Compose numbers based on place value and compare to another number on the number line.</p> <p>Ex. Compare two numbers with different numbers in the tens place (e.g., 20 compared to 60) on the number line and explain 20 has two 10s or 20 ones and 60 is made of six 10s or 60 ones as it is written.</p> <p><b>Students will:</b></p> <p><b>EE5.NBT.1.</b> Compare numbers to each other based on place value groups by composing and decomposing to 99.</p> <p>Ex. Compare two numbers with different numbers in the tens place (e.g., 20 compared to 60 on the number line).</p> <p>Ex. Demonstrate the difference between two numbers using dimes (e.g., 10 compared to 50).</p> <p>Ex. Decompose a number into tens and ones, given two different numbers (with the understanding that two 10s and three ones combined is 23 ones).</p> <p>Ex. Compare numbers on a table of ones and tens, given two different numbers.</p> <p><b>Students will:</b></p> <p><b>EE5.NBT.1.</b> Compare numbers to 20.</p> <p>Ex. Using a number line and given two numbers, indicate where on the number line the numbers belong between the 10 markers.</p> <p>Ex. Given two numbers, indicate which one is greater, or less, or which comes first or last.</p> <p><b>Students will:</b></p>

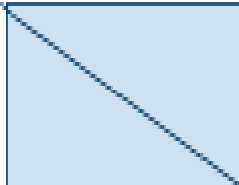
AK Grade-Level Clusters	AK-DLM Essential Elements	Instructional Examples
		<p><b>EE5.NBT.1.</b> Compare numbers 0-10.  Ex. Given two numbers, indicate if numbers are same or different.  Ex. Find two numbers that are the same/ or two that are different.</p>
<p><b>5.NBT.2.</b> Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.</p>	<p><b>EE5.NBT.2.</b> Use the number of zeros in numbers that are powers of 10 to determine which values are equal, greater than, or less than.</p>	<p><b>Students will:</b>  <b>EE5.NBT.2.</b> Extend patterns in the number of zeros when multiplying by the powers of 10 up to 1,000, order numbers to 100.  Ex. Place numbers in order.  Ex. Given a range of numbers (e.g., 200-300-253), arrange in order.  Ex. Indicate (e.g., head stick, pointing) correct order up to 100.  Ex. Given 20 dimes, count from 10 to 100 by tens and indicate that it is \$2.</p> <p><b>Students will:</b>  <b>EE5.NBT.2.</b> Recognize patterns in the number of zeros when multiplying a number by powers of 10.  Ex. Presented with lists of number sentences (e.g., <math>10 \times 1 = 10</math>, <math>10 \times 2 = 20</math>, <math>10 \times 3 = 30</math>), identify the pattern.  Ex. Arrange numbers in order when presented with tens place value number cards out of order.  Ex. Presented numbers 10, 20, 30, 40, __, indicate the next correct number in the sequence.  Ex. Given 10 dimes, count from 10 to 100 by tens and indicate that is \$1.</p> <p><b>Students will:</b>  <b>EE5.NBT.2.</b> Order multiples of ten ranging from 0-50 in sequential order from least to greatest.  Ex. Presented a range of numbers 0-50, indicate whether they are in correct order.  Ex. Presented a range of numbers (e.g., 30-50), indicate if numbers are in correct order.  Ex. Given five dimes, count from 10 to 50 by tens and indicate that is 50 cents.</p> <p><b>Students will:</b>  <b>EE5.NBT.2.</b> Indicate the sequential order of numbers to 10.</p>

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		<p>Ex. Indicate if numbers 1-10 are in correct order when presented (in and out of order).</p> <p>Ex. Indicate where on number line each number belongs.</p> <p>Ex. Given 10 pennies, count to 10.</p>
<p><b>5.NBT.3.</b> Read, write, and compare decimals to 1000ths.</p> <p><i>f</i> Read and write decimals to 1000ths using base-ten numerals, number names, and expanded form, e.g., <math>347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)</math>.</p> <p><i>f</i> Compare two decimals to 1000ths based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p>	<p><b>EE5.NBT.3.</b> Compare whole numbers up to 100 using symbols (<math>&lt;</math>, <math>&gt;</math>, <math>=</math>).</p>	<p><b>Students will:</b></p> <p><b>EE5.NBT.3.</b> Round three-digit whole numbers to hundreds place.</p> <p>Ex. Choose card with correct answer on it after being presented a three-digit number and told to round to nearest hundreds place value.</p> <p>Ex. Given a three-digit number, generate (speaks, types, etc.) the answer for rounding to the nearest hundreds place value.</p> <p><b>Students will:</b></p> <p><b>EE5.NBT.3.</b> Round two-digit whole numbers to the nearest 10 from 0-90.</p> <p>Ex. Given a number between 1-89 and cards with the answer on one, pick correct number when ask to round to nearest 10.</p> <p>Ex. Using a number line, round to nearest 10.</p> <p><b>Students will:</b></p> <p><b>EE5.NBT.3.</b> Determine if a single-digit number is closer to zero or 10.</p> <p>Ex. Given a number between one and nine, indicate if the number is closer to zero or 10.</p> <p>Ex. Using a number line, indicate if given number is closer to 10 or zero.</p> <p><b>Students will:</b></p> <p><b>EE5.NBT.3.</b> Indicate more or less than five.</p> <p>Ex. Using a pegboard with pegs placed in the holes divided into two different sets, indicate which has more or less.</p> <p>Ex. Presented with a set of five, and another set, indicate if second set is more or less than five.</p> <p>Ex. Presented with three pennies or five pennies, choose which is more.</p> <p>Ex. Given a number line, indicate if two or four is closer to five.</p>
<p><b>5.NBT.4.</b> Use place value</p>		<p><b>Students will:</b></p>







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using the standard algorithm.		<p><b>EE5.NBT.5.</b> Multiply whole numbers up to <math>5 \times 5</math>.  Ex. Choose correct answer for <math>3 \times 3</math>.  Ex. When asked what <math>4 \times 4</math> equals, identify 16 from an array of choices.</p> <p><b>Students will:</b>  <b>EE5.NBT.5.</b> Use repeated addition to show multiplication with single digits 1-5.  Ex. Add <math>2 + 2 + 2</math> to justify <math>2 \times 3</math>.  Ex. When given a picture of a garden with two rows of five carrot plants in each, identify <math>5 + 5</math>.</p> <p><b>Students will:</b>  <b>EE5.NBT.5.</b> Use concrete representations to show numbers 1-5.  Ex. Given pictures of five cars, arrange them into one row.  Ex. Count four chairs in a row.</p>
<p><b>5.NBT.6.</b> Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p> <p><b>5.NBT.7.</b> Add, subtract, multiply, and divide</p>	<p><b>EE5.NBT.6-7.</b> Illustrate the concept of division using fair and equal shares.</p>	<p><b>Students will:</b>  <b>EE5.NBT.6-7.</b> Apply the concept of fair share and equal shares to solve a division problem.  Ex. Divide a snack equally among classmates.  Ex. Divide a square piece of paper equally among classmates.  Ex. Divide themselves into equal teams.  Ex. Divide a quantity into equal shares (e.g., “If I find 20 dollars, how could five people share this?” <math>20/5=4</math> (division structure partitive/fair shares)).</p> <p><b>Students will:</b>  <b>EE5.NBT.6-7.</b> Illustrate the concept of division using fair and equal shares.  Ex. Fold paper in equal shares.</p> 

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<p>decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.</p>		<p>Ex. Given 10 counting cubes divided among three students, recognize when students have the same number (equal share) and when students do not have the same number (not equal share).</p> <p><b>Students will:</b>  <b>EE5.NBT.6-7.</b> Construct equal sets.  Ex. Use sorting tray and colored blocks to construct equal sets.  Ex. Given 16 pencils, share equally onto four students.  Ex. Use an organizer to group or partition objects into two or more sets.  Ex. Create a model of equal sets by counting the objects in each set.</p> <p><b>Students will:</b>  <b>EE5.NBT.6-7.</b> Replicate an equal set from a model.  Ex. Count out three objects after teacher counts out three objects.  Ex. Given a set of three objects, finding a matching set.</p>

# **Fifth Grade Mathematics Standards: Number and Operations--Fractions**

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<p><b>Use equivalent fractions as a strategy to add and subtract fractions.</b></p> <p><b>5.NF.1.</b> Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. <i>For example, <math>\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}</math>. (In general, <math>\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}</math>.)</i></p>	<p><b>EE5.NF.1.</b> Identify models of halves (<math>\frac{1}{2}</math>, <math>\frac{2}{2}</math>) and fourths (<math>\frac{1}{4}</math>, <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{4}{4}</math>).</p>	<p><b>Students will:</b>  <b>EE5.NF.1.</b> Differentiate fractional parts less than <math>\frac{1}{4}</math>.  Ex. With fraction bars labeled <math>\frac{1}{4}</math>, compare the <math>\frac{1}{4}</math> to fraction bars to those less than <math>\frac{1}{4}</math> and identify the fraction using numerals.  Ex. Using squares, fold it in <math>\frac{1}{4}</math>, and then <math>\frac{1}{8}</math>, and tell which is more and which is less.  Ex. Divide a square into <math>\frac{1}{4}</math> and then <math>\frac{1}{8}</math> and tell which is more.  Ex. Divide a circle into the correct fractions when shown the numerical representation of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, or <math>\frac{1}{8}</math>.</p> <p><b>Students will:</b>  <b>EE5.NF.1.</b> Differentiate between halves, fourths, and eighths.  Ex. With pictures cut into halves, pictures cut into fourths, and pictures cut in eighths, sort the pictures.  Ex. Using fraction bars, identify the bar that is <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, or <math>\frac{1}{8}</math> of the whole using a template.  Ex. Given a partitioned shape, shade it to show <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, or <math>\frac{1}{8}</math> when asked.  Ex. Using an analog clock, shade the clock to show the quarter hour.</p> <p><b>Students will:</b>  <b>EE5.NF.1.</b> Differentiate between whole and a part.  Ex. Given a whole sandwich, cut the sandwich in half (e.g., cut horizontally, vertically, and diagonally), and indicate which is half and which is whole.  Ex. Draw a square on a dry erase board; then draw a line to cut the square in half.  Ex. When playing a game in which the class is divided into two teams, indicate that only half the class is on each team.</p> <p><b>Students will:</b>  <b>EE5.NF.1.</b> Recognize that fractions are part of a whole.  Ex. Assemble a simple puzzle to demonstrate pieces of a whole.</p>

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		Ex. Using a self-sticking non-adhesive shape, take apart and put together fractional parts of a whole.
<p><b>5.NF.2.</b> Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. <i>For example, recognize an incorrect result <math>2/5 + 1/2 = 3/7</math>, by observing that <math>3/7 &lt; 1/2</math>.</i></p>	<p><b>EE5.NF.2.</b> Identify models of thirds (<math>1/3</math>, <math>2/3</math>, <math>3/3</math>) and tenths (<math>1/10</math>, <math>2/10</math>, <math>3/10</math>, <math>4/10</math>, <math>5/10</math>, <math>6/10</math>, <math>7/10</math>, <math>8/10</math>, <math>9/10</math>, <math>10/10</math>).</p>	<p><b>Students will:</b>  <b>EE5.NF.2.</b> Solve two-step word problems using addition and subtraction of numbers after showing the problem in numerals.  Ex. Susan has 35 compact discs. She bought three more and gave four to her little brother, Dylan. How many compact discs does Susan have now? Show the problem and explain why the answer is reasonable.  Ex. Johnny has a bag of 36 cookies. He ate four of them and gave two to Amy. How many cookies does he have? Show the problem and explain why answer is reasonable.</p> <p><b>Students will:</b>  <b>EE5.NF.2.</b> Solve two-step word problems using addition and subtraction of whole numbers.  Ex. Billy jumped rope for 10 minutes, played basketball for 15 minutes, and ran for five minutes. How many minutes did he spend exercising?  Ex. Jenny has 30 text messages left on her cell phone plan. She sent 10 messages to Gary and received eight messages from her mom. How many text messages are left on her plan?</p> <p><b>Students will:</b>  <b>EE5.NF.2.</b> Solve one-step problems using addition and subtraction.  Ex. Connie had five marbles. Juan gave her eight more marbles. How many marbles does Connie have all together?  Ex. You have eight pennies. Give me two pennies. How many pennies do you have now?</p> <p><b>Students will:</b>  <b>EE5.NF.3.</b> Recognize words that are used for addition and subtraction.  Ex. Using flash cards, indicate whether the word is used for addition or subtraction (e.g., more, increased, less, take away, decreased).  Ex. Build a wall of words used for addition—sum, all together, add, more,</p>

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		<p>increased, etc.</p> <p>Ex. Build a wall of words used for subtraction—difference, decreased, take away, less, spent, etc.</p> <p>Ex. Indicate the concept of more (addition) and less (subtraction).</p>

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# **Fifth Grade Mathematics Standards: Measurement and Data**

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<p><b>Convert like measurement units within a given measurement system.</b></p> <p><b>5.MD.1.</b> Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems.</p>	<p><b>EE5.MD.1.a.</b> Tell time using an analog or digital clock to the half or quarter hour.</p>	<p><b>Students will:</b>  <b>EE5.MD.1.a.</b> Tell time using a digital clock to the minute and an analog clock to the nearest five minutes.  Ex. Tell time to the minute on a digital clock.  Ex. Place hand on a clock within five minutes of the stated time.</p> <p><b>Students will:</b>  <b>EE5.MD.1.a.</b> Tell time using an analog or digital clock to the half or quarter hour.  Ex. Indicate time to the quarter hour on a digital clock.  Ex. Place clock hands to show the half hour on an analog clock.</p> <p><b>Students will:</b>  <b>EE5.MD.1.a.</b> Tell time to the half hour using a digital clock and to the half hour using an analog clock.  Ex. Identify which clock shows a stated time on a digital clock (3:30).  Ex. Move hands on a clock to show a stated hour.</p> <p><b>Students will:</b>  <b>EE5.MD.1.a.</b> Identify morning and afternoon.  Ex. Identify activity on schedule and relate to morning (before lunch) to afternoon (after lunch).</p>
	<p><b>EE5.MD.1.b.</b> Use customary units to measure weight and length of objects.</p>	<p><b>Students will:</b>  <b>EE5.MD.1.b.</b> Use two customary units to measure weight and length of objects.  Ex. Weigh an object in pounds and weigh again using ounces.  Ex. Weigh objects in ounces and weigh again in pounds.  Ex. Measure a variety objects in inches and measure again in feet.  Ex. Measure an object using feet and measure again using inches.</p> <p><b>Students will:</b></p>

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		<p><b>EE5.MD.1.b.</b> Use customary units to measure weight and length of objects.  Ex. Weigh a variety of objects in pounds.  Ex. Weigh a variety of objects in ounces.  Ex. Measure length of objects using feet.  Ex. Measure length of objects using inches.</p> <p><b>Students will:</b>  <b>EE5.MD.1.b.</b> Identify customary units of measurement for weight and length.  Ex. Given an object, choose pounds or inches to weigh a person.  Ex. Shown a scale and a ruler, choose correct tool to measure weight of objects (use inch ruler if possible).</p> <p><b>Students will:</b>  <b>EE5.MD.1.b.</b> Identify which tools are used to weigh.  Ex. Identify which tool you use to weigh a person.  Ex. Indicate which tool is used to measure length.  Ex. Indicate which tool is used to measure flour and sugar in a recipe.</p>
	<p><b>EE5.MD.1.c.</b> Indicate relative value of collections of coins.</p>	<p><b>Students will:</b>  <b>EE5.MD.1.c.</b> Indicate relative value of coins and bills to each other.  Ex. Given a quarter and a collection of nickels, select five nickels to trade for one quarter.  Ex. Given a dollar and offered three quarters in exchange, indicate that the dollar is worth more.  Ex. Given a dollar and a collection of dimes, select 10 dimes in exchange for the dollar.</p> <p><b>Students will:</b>  <b>EE5.MD.1.c.</b> Indicate relative value of collections of coins.  Ex. When asked what is worth five cents, chooses a nickel. When asked what is worth 25 cents, choose a quarter.  Ex. Given two coins, identify the value of each and indicate which is more.</p>

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		<p>Ex. Given 25 pennies and two dimes, indicate which set is worth more.</p> <p><b>Students will:</b>  <b>EE5.MD.1.c.</b> Identify coins (penny, nickel, dime, quarter) and their values.  Ex. Given two coins, choose correct coin by name and value.  Ex. Shown a coin, names coin.  Ex. Show relative values of penny, nickel, dime, quarter by arranging them in order from least to most.</p> <p><b>Students will:</b>  <b>EE5.MD.1.c.</b> Match coins that are alike (penny, nickel, dime, quarter).  Ex. Given a group of coins, match coins that are alike.  Ex. Given a picture of a quarter, choose a quarter from a group of coins.</p>
<p><b>Represent and interpret data.</b></p> <p><b>5.MD.2.</b> Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Use operations on fractions for this grade to solve problems involving information presented in line plots. <i>For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</i></p>	<p><b>EE5.MD.2.</b> Represent and interpret data on a picture, line plot, or bar graph.</p>	<p><b>Students will:</b>  <b>EE5.MD.2.a.</b> Collect, organize, and interpret data. Create a graph using a graph template, and display the data on the graph.  Ex. Count number of students who like dogs and number who like cats. Show where on the graph to put the bar for dogs and for cats and where to indicate the number of votes and enter the results on the graph. Determine if the result shown seems reasonable and why (e.g., graph shows that students have more snakes as pets than dogs).  Ex. Based on class observation (how many wore red today), determine how to graph data and show graph telling which was more, less, or the same.</p> <p><b>Students will:</b>  <b>EE5.MD.2.a.</b> Represent and interpret data on a picture, line plot, or bar graph given a model and a graph to complete.  Ex. Given data, plot data points on a given graph. Determine which has more, less, or the same.  Ex. Take given data from a survey and put the same data on a given graph using a model. Tell one thing the graph says about the survey.</p>

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		<p><b>Students will:</b>  <b>EE5.MD.2.a.</b> Display data on a picture, line plot, or bar graph and answer questions about the graph.  Ex. Indicate where data should go on the graph, shade/color correct amount of spaces on given graph, and answer a question about the graph (e.g., Is this about dogs?).  Ex. Use objects to display data on graph and indicate type of graph.</p> <p><b>Students will:</b>  <b>EE5.MD.2.a.</b> Identify a simple graph.  Ex. Identify a simple picture graph or schedule.  Ex. Pick out a graph when presented with a graph and a non-graph.</p>
<p><b>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.</b></p> <p><b>5.MD.3.</b> Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</p> <p><i>f</i> A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.</p> <p><i>f</i> A solid figure, which can be packed without gaps or overlaps using</p>	<p><b>EE5.MD.3.</b> Identify common three-dimensional shapes.</p>	<p><b>Students will:</b>  <b>EE5.MD.3-5.</b> N/A</p> <p><b>Students will:</b>  <b>EE5.MD.3-5.</b> Determine volume of a cube by counting units of measure.  Ex. Given cubes that fill a box with no gaps (small number, how many), determine by counting the number of cubes needed to fill the box.  Ex. Given a cube 4 x 4 x 4 inches constructed of one square inch cube, disassemble it to determine by counting how many cubes were required.</p> <p><b>Students will:</b>  <b>EE5.MD.3-5.</b> Identify objects that have volume.  Ex. Given a group of pictures (cup, rock, fork), choose which one can be filled.  Ex. Identify objects in the room that can be filled (e.g., cup, fish tank).  Ex. Given a square and a cube, indicate cube.</p> <p><b>Students will:</b>  <b>EE5.MD.3-5.</b> Demonstrate solid or liquid, full or empty.  Ex. Given a glass of water and a paper weight, indicate which one you can pour.</p>

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<p><math>n</math> unit cubes, is said to have a volume of <math>n</math> cubic units.</p> <p><b>5.MD.4.</b> Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.</p> <p><b>5.MD.5.</b> Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.</p> <p><i>f</i> Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of</p>		<p>Ex. Given a glass of water and a paper weight, demonstrate that the water is liquid by pouring into another container.</p> <p>Ex. Given a glass full of water and an empty glass, indicate which one is full and which one is empty.</p>

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<p>multiplication.</p> <p><i>f</i> Apply the formulas <math>V = l \times w \times h</math> and <math>V = b \times h</math> for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.</p> <p><i>f</i> Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.</p>		



## Fifth Grade Mathematics Standards: Geometry

AK Grade-Level Clusters	AK-DLM Essential Elements	Instructional Examples				
<p><b>Graph points on the coordinate plane to solve real-world and mathematical problems.</b></p> <p><b>5.G.1.</b> Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., <i>x</i>-axis and <i>x</i>-coordinate, <i>y</i>-axis and <i>y</i>-coordinate).</p> <p><b>5.G.2.</b> Represent real-</p>	<p><b>EE5.G.1-5.</b> Sort two-dimensional figures and describe the common attributes such as angles, number of sides, corners (dimension), and color.</p>	<p><b>Students will:</b></p> <p><b>EE5.G.1-5.</b> Sort into quadrant tables and describe figures by two common attributes.</p> <p>Ex. Sort figures by color and shape.</p> <p>Ex. Sort figures by congruent and non-congruent.</p> <p>Ex. Sort figures by angle and number of sides.</p> <table><tr><td><b>Blue circles</b></td><td><b>Red circles</b></td></tr><tr><td><b>Blue squares</b></td><td><b>Red squares</b></td></tr></table> <p><b>Students will:</b></p> <p><b>EE5.G.1-5.</b> Sort two-dimensional figures and describe the common attributes such as angles, number of sides, corners (dimension), and color.</p> <p>Ex. Given shapes, sort by angles and indicate how you sorted them.</p> <p>Ex. Given shapes sorted based on the number of sides, sort them by another attribute.</p> <p><b>Students will:</b></p> <p><b>EE5.G.1-5.</b> Sort figures based on a given attribute.</p> <p>Ex. Sort figures by shape.</p> <p>Ex. Sort figures by size.</p> <p><b>Students will:</b></p> <p><b>EE5.G.1-5.</b> Indicate two-dimensional shapes named.</p> <p>Ex. Touch the rough triangle.</p> <p>Ex. Touch the circle.</p>	<b>Blue circles</b>	<b>Red circles</b>	<b>Blue squares</b>	<b>Red squares</b>
<b>Blue circles</b>	<b>Red circles</b>					
<b>Blue squares</b>	<b>Red squares</b>					

AK Grade-Level Clusters	AK-DLM Essential Elements	Instructional Examples
<p>world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.</p> <p><b>5.G.3.</b> Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.</p> <p><b>5.G.4.</b> Classify two-dimensional figures in a hierarchy based on properties.</p>		